

ISSUE: APRIL 1997

LISTing Policy ..... Annual Dues \$14.00

# LISTings

Newsletter of the Long Island Sinclair / Timex Users' Group

15 YEARS AND STILL GOING STRONG!

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Please send all inquiries and  
submissions (including dues)  
to: L.I.S.T.

Mr. Robert Gilder  
69 Jefferson Place,  
Massapequa, NY 11758

COMING EVENTS: The next L.I.S.T.  
meeting will be Sunday, 04/13/97  
at 2 P.M. at the home of Harvey  
Rait (see address above).

NEXT MEETING MAY 18 1997

*On e sample copy sent upon receipt of business size SASE. Copies provided on Exchange basis with other Bona fide user groups. We are always looking for articles, programs, reviews, etc to keep members informed and entertained. You maintain full credit and copyright.*

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With sadness, our President and friend Harvey Rait, passed away in the middle of April. Harvey's daughter called me and stated that the service would be held on Sunday morning, 9:45, April 20th, at Gutterman's chapel, 175 Long Beach Road, Rockville Centre, NY. Bob Malloy posted the arrangements on the internet and we had attended the service. There were over 100 men and women at the service - a testimonial of the man, Harvey Rait, my friend.

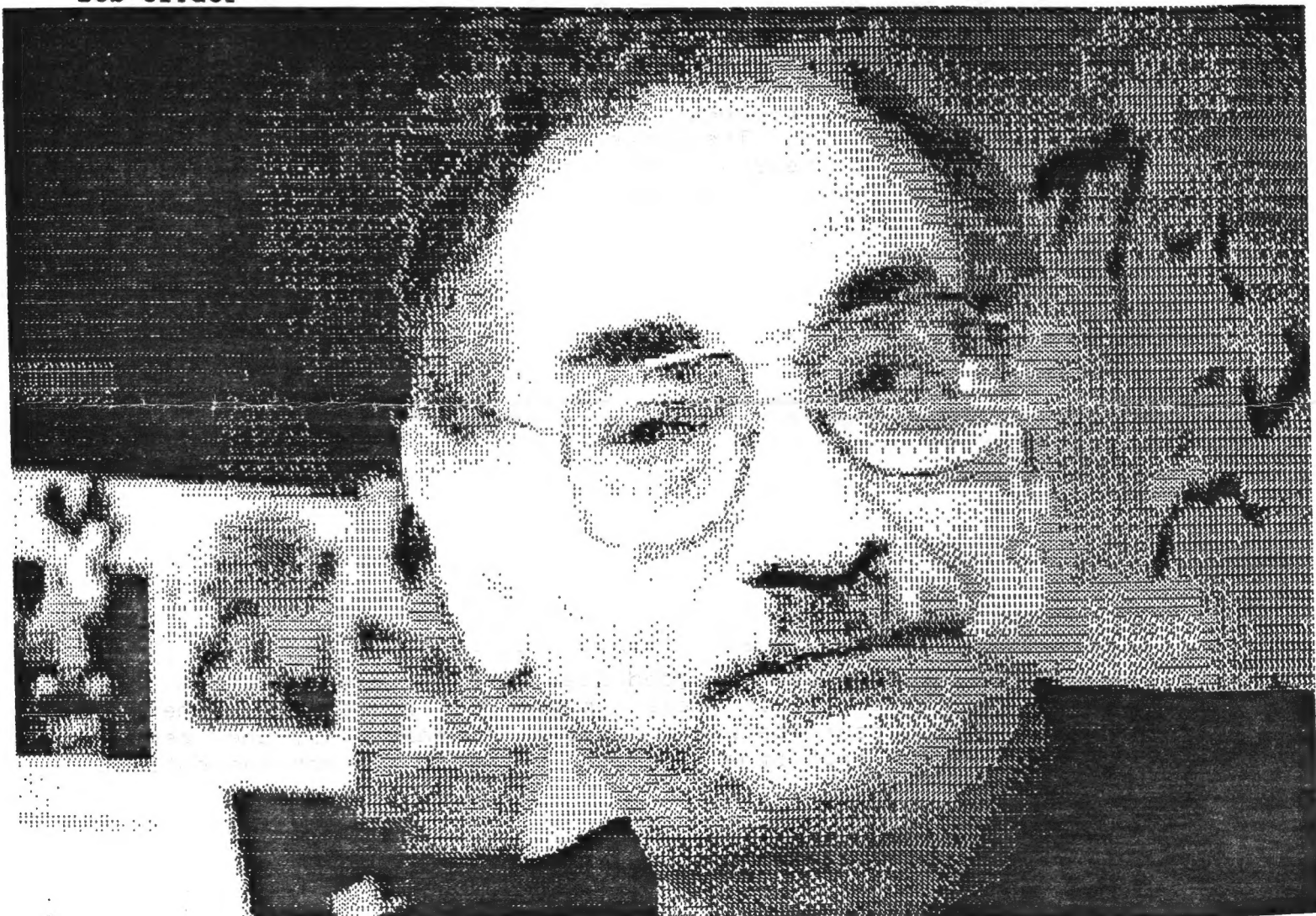
I have been mourning Harvey for a week, thinking about this man I call my friend. I recalled the first time I had met Harvey at Bob Malloy's home in the fall of 1982. We were going to join the LIST Group in Northport at Paul Donally's home. Every second Sunday of the month, we would meet at Bob Malloy's home and then motor on to the LIST meeting. Approximately, five years later, we lost the meeting room at the Huntington Library. We didn't know what we would do for a meeting place and Harvey came to our rescue - we could meet at his home.

Harvey had become our President. For ten years he would wield the gavel with wisdom. Who will take over the reigns, I don't know!

Harvey was my friend! May you rest in peace! And for his wife Sandy, their children and grand-children, we wish you well.

Harvey, we all love you.....

Bob Gilder



## ATTEND A LIST MEETING WITHOUT LEAVING HOME

Did you know that there is a way for those distant members, who find traveling to Long Island to attend a LIST meeting too much, to participate in LIST meetings and have their voices heard. This can be accomplished by using a section of the Internet called IRC (Internet Relay Chat). One of our members, Alvin Albrecht, has written a primer on the use of IRC. It will follow this article and should answer many of the questions you may have regarding this modern day communication miracle.

Date: Mon, 7 Apr 1997 17:55:17 -0600 (MDT)  
From: "Alvin R. Albrecht" <albrecht@freenet.calgary.ab.ca>  
To: Bob Malloy <bmalloy@IDT.NET>  
Subject: Re: List meeting

### SHORT IRC PRIMER

This Sunday's LIST meeting is being held over the internet using IRC (Internet Relay Chat). If you're unfamiliar with IRC, here's a short introduction and the means for you to connect. If your ISP doesn't supply IRC client software, don't worry: you can get on IRC via telnet like I do.

IRC is a means for groups of people from around the world to carry on live conversations. Messages typed by each individual go to a central IRC server computer which distributes these messages to other servers. As a server receives a message, it sends the message to all the individuals connected to it. The server acts like a communication hub, collecting and sending messages to individuals and other servers connected to it. The group of servers connected to each other make up the IRC network. There are three major IRC networks: EFnet (the largest and earliest), Undernet and DALnet. As each IRC network is made up of a disjoint set of servers, messages appearing on each network are not seen on other networks. It is possible to bridge communications between IRC networks via a gateway server (that is connected to more than one IRC network at once), but this requires an operator's cooperation.

In order to connect to IRC, you need some IRC client software (the program either your computer must run - if you've got a SLIP connection - or your ISP's computer must run - if you've got a shell account - that communicates with an IRC server). Many people like myself have a shell account from an ISP provider that has no IRC client software. What we can do is connect to another computer on the internet that has generously donated some of its resources to act as an IRC client. Every IRC network has such a facility except EFnet (or so it seems as I haven't found any facility). So, to maximize the number of people who can join the LIST meeting, it's a good idea to hold it on Undernet. As an added bonus, Undernet is less prone to net-splits (when a communication break occurs between servers so that half the people can't communicate with each other temporarily) and is less susceptible to hackers than EFnet.

## HOW TO JOIN THE LIST MEETING:

### A. IF YOU'VE GOT AN IRC CLIENT:

Start up irc. Change to one of the undernet servers listed below using the irc command:

```
/server servername
```

Then join the #listing group (or chat room)

```
/join #listing
```

Any string entered with a "/" prefix is interpreted as a command. Any other string is interpreted as a message and is broadcast to all other users in the group.

If you are the first one there, you create the "#listing" group when you join it and your name will have an "@" in the front. This means you are the channel operator and you have special powers within the group.

To quit irc, use the "/quit" command.

### B. IF YOU DON'T HAVE ANY IRC CLIENT SOFTWARE

You'll have to connect to one of the following servers via telnet (telnet is a unix command that lets you log on to another computer on the internet). These four servers allow irc connection to Undernet via telnet:

```
telnet://telnet1.eu.undernet.org:6677/      Yes, 6677 and not 6667
telnet://telnet.wildstar.net:6667/
telnet://apache.wildstar.net:6667/
telnet://cherokee.wildstar.net:6667/
```

All four allow only a certain number of users on at once. If you can't get on one of them, try another.

You'll be asked for a terminal to emulate. Enter "vt100" - your browser or whatever should be able to handle this. You'll also be asked to enter a nickname - this is the name you will be known as while on irc. It must be unique over the entire IRC network.

The telnet addresses given above are written as URLs. If you've got a unix shell account, type:

```
telnet telnet1.eu.undernet.org 6677
```

on the command line. This starts up the telnet program and connects to the eu.undernet computer on the internet. Once the program starts, you'll see it print something about an escape character (probably '^[' - control right square bracket). Preceding text with this character tells telnet that you are sending a command to it rather than the computer you've connected to. To quit telnet, type the escape



character followed by "quit". Top get a list of telnet commands, type the escape character followed by a question mark.

To quit IRC, enter the "/quit" command. This will close the connection with the computer on the internet that you've connected to and will bring you back to the telnet prompt where you can type "quit" to exit (this time you don't need the escape character as telnet knows you're talking to it).

\*\*\* If you are ever asked for a log in name, try "guest" or "anonymous".

#### SHORT LIST OF UNDERNET SERVERS

Choose the one closest to you:

okc.ok.us.undernet.org  
SanDiego.CA.US.Undernet.org  
Dallas.Tx.US.Undernet.org  
London.UK.eu.Undernet.org  
toronto.on.ca.undernet.org  
Atlanta.GA.us.undernet.org  
auckland.nz.undernet.org

Try to get on the Undernet before next Sunday. You can get a feel for irc, by joining the group "#chatzone" which is always full of too many people.

If you've got any problems, you can mail me at albrecht@freenet.calgary.ab.ca

Alvin Albrecht, Canada

#### WHO'S ONLINE

Some of us here at LIST have been wondering how many of our members are using modems with their Sinclair computers. It would be helpful if those of you who are into communications would take a few minutes to let us have the following info.

COMPUTER USED .....  
COMMS PRGRM .....  
BAUD RATE .....  
EMAIL ADDRESS.....  
ONLINE SERVICES USED.....  
SUGGESTIONS FOR LIST.....

You can reply to me at either of the following addresses:  
74776.2342@compuserve.com  
bmalloy@chelsea.ios.com (Internet)

Or, you can use our snailmail address.

Bob Malloy

# ZX Spectrum Modifications to U.S.A. Standards

By Bob Gilder

Last month on the Internet there was some talk about the Spectrum in the USA.

While I was on a business trip in Europe last December (1984), I purchased a ZX Spectrum computer. No, I'm not tired of my TS 2068, but my first love is my soldering iron and a heap of electronic components with a burning desire to experiment with these electronic marvels we call computers.

The TS 2068 and the ZX Spectrum are closely related in design, however, there are physical and electronic differences between both computers. Many European publications provide a store of add-on, build yourself hardware articles to enhance the Spectrum, but NOT the TS 2068. My Spectrum will now become a test bed for building Spectrum hardware, insure that the hardware functions per specifications, then modifying the hardware to operate with the TS 2068.

This article is dedicated to those individuals who have a Spectrum or intend to purchase one and want to get the most out of it - to operate on 110 VAC without a step-up transformer, convert the PAL decoder to operate on NTSC video standard for color operation and add a composite video output for your monitor.

## Power Supply Conversion - 110 VAC

The original Spectrum power supply module requires 220 VAC at the primary and outputs approximately 9-10 VDC. Two options for modification can be considered:

1 - Rewind the original transformer primary winding to operate at 110 VAC or adding additional windings to the secondary to increase the output voltage using the original primary windings. The transformer design allows fairly easy rewinding of the primary or secondary, but it is work.

2 - Remove the original transformer and replace it with a commercial 110 VAC, 8 VAC Center Tap transformer.

I chose option two because I had an 18 VAC CT transformer on hand that fit into the Spectrum power supply case. The reason an 18 volt CT transformer was selected is that a 9-10 transformer is

pretty hard to come by and by cutting the transformer center tap and paralleling both 9 volt windings with proper phasing, the voltage is 9 volts with the operating current doubled. Also the original power supply rectification and filter assembly can still be used without modification.

The first step in this operation is to remove the power supply case top by removing three (3) Phillips head screws. Remove the case top and set aside with the three retaining screws previously removed. Carefully remove the transformer with the filter assembly and both input and output cables. Measure the transformer core (metal laminations) for height, width and length and record these measurements. I used an old (approximately 3 years old) Radio Shack transformer, however I am not sure that it is available. A visit to any electronics TV Supply house will provide you with the necessary transformer. Ask for an 18 Volt Center Tap, 1 Amp Filament Transformer and measure it so that what you buy will fit the case. Surgery on the transformer first begins with removal of the mounting frame. Set the transformer on your work bench upside down and pry up the four (4) retaining tabs on the bottom of the transformer core. With a common screwdriver (flat blade), insert the blade between the mounting frame and transformer core and apply a prying motion until the frame has exposed both sides of the transformer core. Remove the frame from the core and trial fit the transformer into the power supply case. If the fit is a little loose, a strip of foam tape (weather stripping) will snug things up at assembly time.

Remove the transformer from the case and locate the secondary side. This is the side with either two green leads and one lead with stripes or three (3) solder lugs. Using a sharp knife (X-ACTO), #11 blade) or razor blade, using light cutting pressure, cut a slit from top-to-bottom at the center point on the transformer secondary side insulation. Carefully pull both sides of the cut tape towards their respective sides which should expose three copper wires either terminated to lugs or wires.

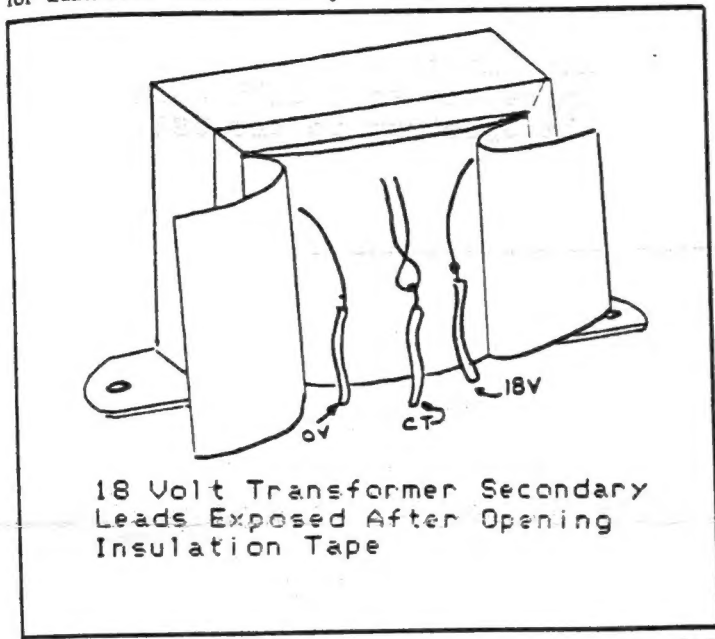
Using a low wattage soldering iron, desolder the center tap winding from a lug or wire. Examine the copper wire tap; it can be either a loop or two separate them. Cut two small strips of tape, any kind, and place one strip on one of the center tap wires. This is for identification purposes only to properly phase both secondary windings which we will parallel. Using an Ohm meter or continuity tester, connect one lead of the test instrument to the CT lead with the strip of tape. The other test lead is touched to either or both lugs/wires to locate the mating lead of the CT lead with ID tape. Now, follow this carefully, place the other strip of tape on the lug/lead which did NOT indicate continuity. Connect both taped wire ends together, remove both strips of tape and solder these leads together. Connect the remaining two leads together and solder these as you had soldered the others.

Before going further, the transformer output voltage must be tested for a voltage and correct phasing. Connect a two wire cable with a proper 110 VAC connector to the transformer primary. The primary side should state 110 VAC or have two black wires attached to it. Insulate these connections to avoid any contact with the line voltage. Set your Voltmeter function switch to AC and the range switch to 25-50 VAC. Plug the line cord into an AC wall outlet and touch both secondary connections with the voltmeter probes. If the voltmeter is reading 9 VAC or higher then all is well. On the other hand, if no voltage is present, then remove the line cord from the wall socket, desolder the secondary connections previously made and switch secondary leads. Repeat all previous steps until proper AC Voltage is obtained.

Attach two, 2 inch leads to the secondary contacts and solder, then place some insulating tape over the exposed secondary leads. Place the transformer into the bottom of the case and add some foam backed tape to it if the fit is too loose.

Desolder the filter assembly circuit board from the original transformer and place in the case next to the transformer secondary. Connect both secondary wires

to the filter circuit board in the holes which the original transformer was soldered to. Any wire can connect to either hole for transformer connection. If you wish, the AC line strain relief



18 Volt Transformer Secondary Leads Exposed After Opening Insulation Tape

from the original transformer can be removed and the 110 VAC line cord can be inserted into it for a custom fit.

Set the function switch on your voltmeter to DC and the range switch to 25 VDC. Plug the line cord into the AC socket and monitor the output voltage at the power supply connector. A reading of 9 VDC or greater will be present.

#### NTSC Color Output

The Spectrum operates on a European video standard called PAL, which means Phase Alternating Lines. PAL provides 625 TV lines as opposed to 525 TV lines with NTSC. The color is automatically corrected at transmission, thus eliminating the requirement for a Tint or Hue control. If we operate the Spectrum without a change in color burst frequency, then the output on a TV screen will be black and white and possibly some diagonal lines. Fortunately a crystal change from 4.43 MHz to 3.57 MHz is all that is necessary to have the Spectrum perform in color in the USA.

A trip to your local Radio Shack should solve the crystal requirement. Ask for part no. 272-1310, TV COLORBURST CRYSTAL at \$1.69. If they do not have the crystal, any TV or Electronic Supply outlet will have one. Just make sure it is a miniature case, HU-18.

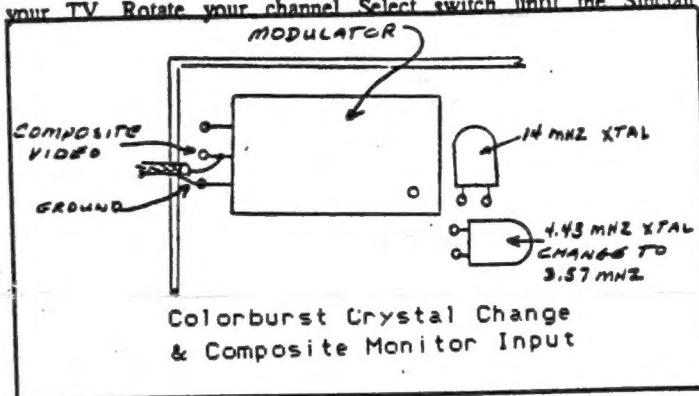
Please note that there are two (2) crystals in the Spectrum computer. A 14 MHz crystal operates the system clock and should not be removed or replaced with a crystal of another frequency. The PAL crystal, 4.43 MHz is one to replace.

Open the Spectrum case by removing five (5) Phillips screws on the case bottom. Carefully open the keyboard section of the case and locate a Phillips screw approximately center on the PC board. Remove this screw and lift out the PC assembly with the keyboard still attached. If you are careful, you will not have to remove the keyboard case section.

The 4.43 MHz crystal is located next to the TV RF Modulator. Insure that you have located the right crystal as the clock crystal shares the same approximate location. Heat up your soldering iron and grasp the 4.43 MHz crystal with two fingers. Disconnect the soldering iron from the AC line and quickly heat up one crystal lead and gently pull with a slight twist at the crystal. Repeat the previous step until the crystal is removed.

**NOTE:** The soldering iron will not zap any semiconductor within the crystal circuit with a static charge if disconnected from AC. Plug the soldering iron back into the AC line to build up heat. Insert the 3.57 MHz crystal into the PC board using the same holes as the crystal you previously removed. Again, disconnect the soldering iron and quickly solder both crystal leads to the PC board. Clip off both leads of the crystal on the underside of the board. Place the PC assembly with keyboard into the lower case.

Attach a cable to the modulator jack and the other end to the UHF lugs on a TV set. The approximate channel should be between 30 and 36. Plug in the modified power supply and turn on your TV. Rotate your channel Select switch until the Sinclair



copywrite message appears on your TV. If you do not wish to add a Video Monitor output to your Spectrum at this time, then disconnect power and the TV cable and reassemble the computer case.

**NOTE:** My Spectrum did not have a trimmer capacitor in the crystal circuit. If yours does and the image on the TV screen appears poor, then you may want to attempt to adjust the trimmer to peak the picture.

#### Composite Video Monitor Output

Obtain an 8 inch length of 50-75 Ohm miniature video cable and prepare both ends of the cable as per diagram. Solder a plug or jack which will mate with your monitor cable to one end of the 8 inch cable. Locate the RF Modulator and mark the computer case bottom between the aft two (2) Modulator leads which terminate into the PC board. Remove the PC board from the case and using a 3/16 inch round file, rout a slot in the case edge only large enough for the monitor cable to exit the computer. Blow out any chips and dust from the case and replace the PC assembly back into the case bottom and secure with the screw previously removed. Solder the center conductor of the cable to the center lead of the Modulator and then solder the shield lead to the aft lead of the Modulator which is signal ground. Attach the Composite Video Monitor lead from your monitor to the composite Video output cable from the Spectrum. Apply power to the Spectrum and the monitor and observe the Sinclair copywrite message on the monitor screen. Remove computer power and replace the five (5) screws previously removed.

The instructions for the three modifications outlined above took longer to prepare than modifying the Spectrum. I hope you feel they were well worth the effort. I do...

Bob Gilder

69 Jefferson Place

Massapequa, NY 11758 CTM

(These modifications are to be made at your own risk. Neither the writer nor CTM can be held responsible to any damage to your computer which may incur with these modifications. Chet)

Your #1 T/S Magazine

WEDGE WORKS.....BY FRED STERN

Welcome back to WEDGE WORKS. Many new things have been added since my last edition. I am now writing this article on my TS1000, using the MEMOTECH WORDPROCESSOR. This came about thanks to a good friend and fellow SINCLAIRIST Mr. Robert Barnett. Bob was kind enough to provide me with a TANDY DMP 105 printer and AERCO printer interface. Researching my software library, I found a copy of the MEMOTEXT RAMBASED WORDPROCESOR from SILICON MOUNTAIN COMPUTERS. This is a very powerful program which combines the MEMOTEXT with a UNIVERSAL PRINTER DRIVER and programing to use my AERCO DISK DRIVE SYSTEM. In order to use this version on MEMOTEXT, I had to make a modification to my computer which allows it to run machine code between 32K and 48K in high memory. John Olinger developed a circuit which used 1 I.C. that preformed the required function when wired into the computer. I needed the circuit, but did not want cut and splice lands on the circuit board. Bob once again came to the rescue. He sent me articles from TIME DESIGN MAGAZINE. One by Mr Tim Stoddard was a modification of the circuit from John Olinger. It piggybacked John Olingers circuit on top of the Z80 CPU inside the computer. This gave me an idea, I made an adopter using John Olingers circuit, and Tim Stoddards incorporation of the circuit to the Z80 CPU. My adopter plugged into the TS1000 and the Z80 plugged into the adopter. The adopter works perfectly, MEMOTEXT is working great, this article is the result.



# ZX81 Extendi-RAM

- ★ Low cost alternative to 16K RAM pack.
- ★ Up to four 1K RAM boards can be used together cost-effectively.
- ★ Easy to build.

by Dave Goodman

For ZX81 owners who do not yet have a 16K RAM pack, our 1K module provides a small, low cost alternative for increased program storage area which can be extended in 1K blocks.

The standard computer contains 1K (1024) Bytes of static memory, out of which some 125 Bytes are used for system variables. A full screen of characters (32 x 22) uses 704 Bytes, and, allowing for program variables expanding during a program run, it can be seen that very little space is left in RAM for BASIC programs!

One solution is to fit a 16K to 32K RAM extension, which may prove expensive to computerists on a low budget. If only a few K of RAM is required, however, this module will meet the requirement.

If the instruction PRINT PEEK 16388 + 256 \* PEEK 16389 is entered directly into the ZX81, the address 17408 will be printed, this being the first byte above RAMTOP.

The two system variables at addresses 16388 and 16389 together contain the size of RAM available for use, and, as RAM address begins at 16384, the highest memory address available in 1K is 17407. A further 1K RAM will need to begin at address 17408 to 18431 etc. Track pins A to F select the required memory block, and only one of these pins should be inserted in each module if more than one module is to be used (see table 1).

Table 1.

Track Pin	Memory Size	Memory Map
ZX81	1K	16384 to 17407
A	2K	17408 to 18431
B	3K	18432 to 19455
C	4K	19456 to 20479
D	5K	20480 to 21503
E	6K	21504 to 22527
F	7K	22528 to 23551

Use A on one module, B on a second module, C on a third module, etc.

## Construction

Insert the 27 track pins (omitting A to F), the 3 IC holders, and the 3 disc

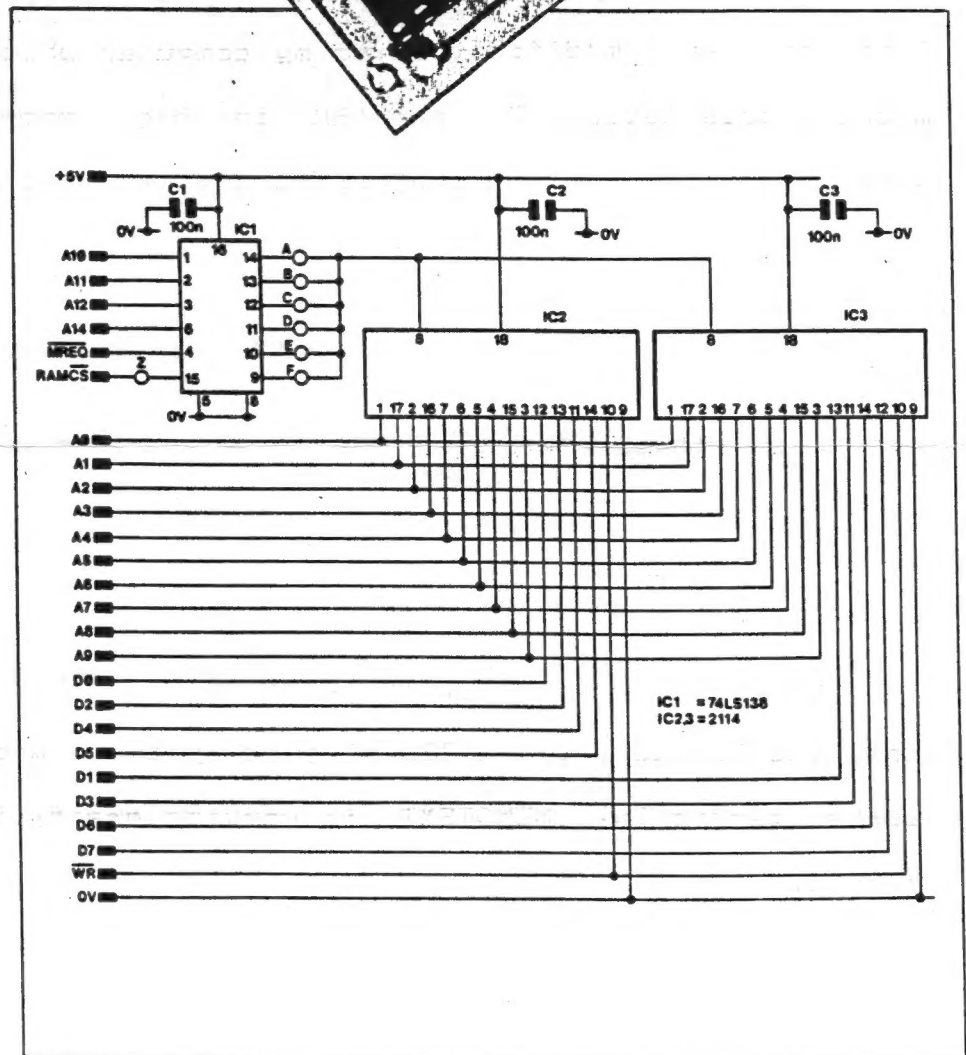
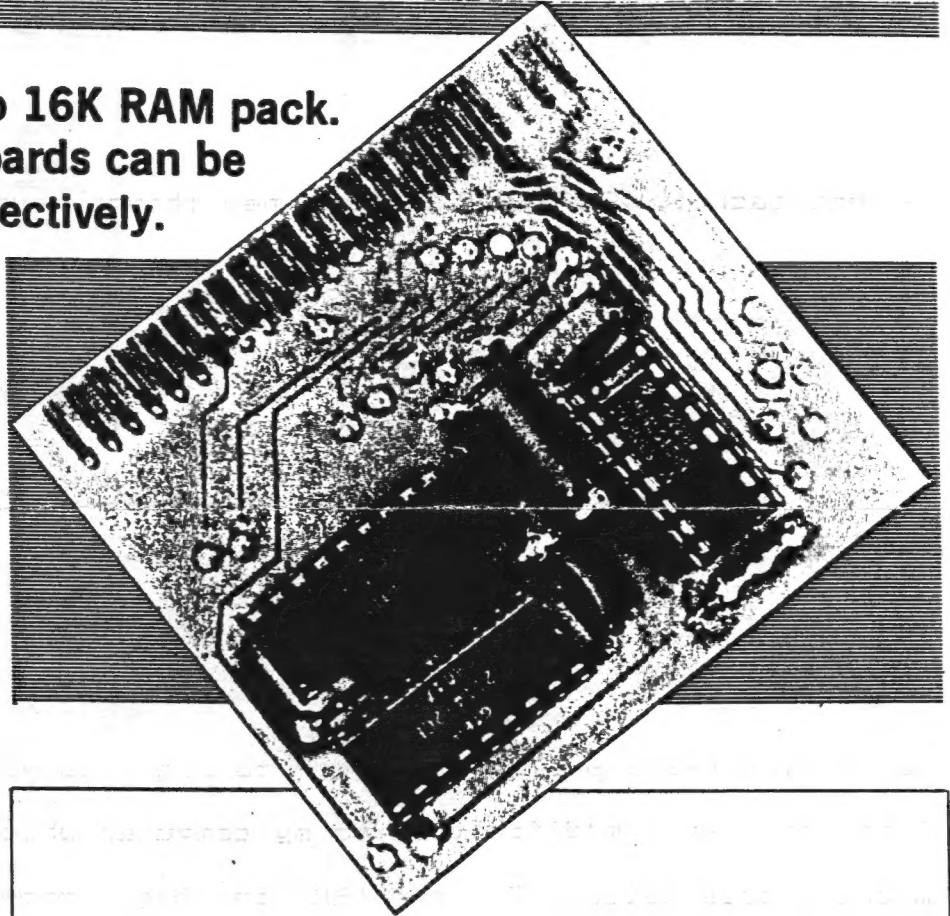


Figure 1. Circuit diagram.

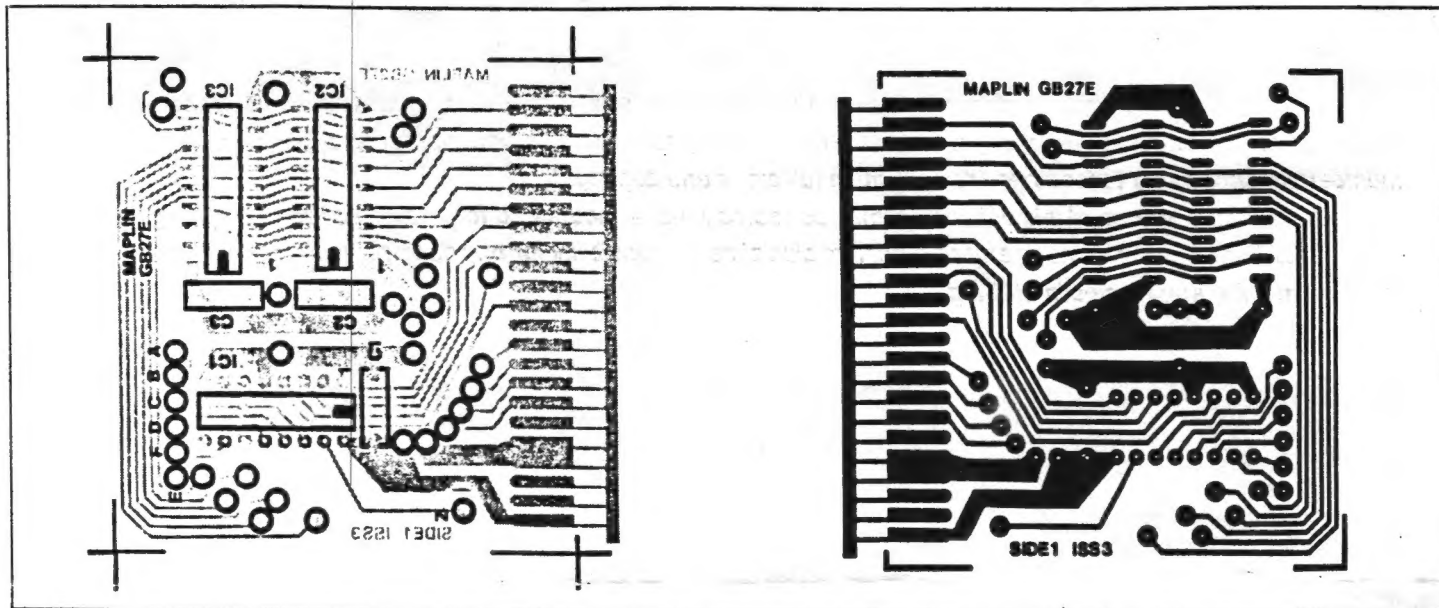


Figure 2. PCB layout and overlay.

capacitors. Carefully solder all connections, then clean excess flux from the PCB. Insert one of the pins A to F (see table 1) and the 3 ICs. Plug the module into the extendiboard, or fit a 2 x 23 way socket (RK35Q) to the edge connector and connect to the ZX81. Switch on, and run the RAMTOP test. Note that the address printed will be one higher than shown in table 1. Further modules can be fitted provided that an extension motherboard is available for the expansion port.

### PARTS LIST FOR ZX81 1K EXTENDIRAM

Capacitors			
C1, C2, C3	2200pF disc ceramic	3 pk	(BY030)
Semiconductors			
IC1	74LS138		(VF53H)
IC2, IC3	2114	2 pk	(QW12N)
Miscellaneous			
	ExtendIRAM P.D.B. kit		(GB27E)
	18 pin DIL kit	2 pk	(HQ76H)
	16 pin DIL kit		(BL19V)
	Track pin	1 pk	(FL82D)

A complete kit of all parts is available.  
Order As LK16S (ZX81 1K ExtendIRAM kit) Price £5.20

ATTENTION LIST Subscribers: When it is time to renew your membership, (look at your mailing label), please make out your check to Harvey Rait, LIST President or to Robert Malloy, Treasurer. PLEASE DO NOT MAKE OUT YOUR CHECK to LIST. Our bank requires a large amount of money in a savings account in order to cash checks. THANK YOU!

Harvey Rait  
5 Peri Lane,  
Valley Stream, NY 11581

Robert Malloy  
412 Pacific Street,  
Massapequa Park, NY 11762

Due to rising postage costs outside of the United States, we must raise our annual dues accordingly:

USA postage \$16.00

CANADA and MEXICO \$17.50 US, and the rest of the world \$24.00 US.

Bob Malloy, LIST Treasurer